Claims

1. A device for joining at least two non-circular substrates (1, 2; 60, 61) which are of the same peripheral shape and comprise inner holes (5, 6; 62, 63), in particular for forming an optical data carrier, wherein the device comprises the following:

   - a receiving unit (3) matched to the inner holes of the substrates for accommodating the substrates (1, 2; 60, 61) in spaced manner and such as to be rotatable about a common axis (8);

   - an aligning unit (10) for aligning the substrates (1, 2; 60, 61) with at least one abutment member (11; 66); and

   - a displacement unit for bringing the substrate outer edges (21, 22, 27, 28, 41, 42; 70, 71) of the substrates into engagement with the abutment member.

2. A device in accordance with claim 1, characterized in that the alignment unit (10) comprises at least one counter abutment member (24, 25; 32, 33; 43, 44; 47; 78 - 81).

3. A device in accordance with claim 1 or 2, characterized in that the displacement unit moves the receiving unit (3), the abutment

member (11; 66) and/or the counter abutment member (24, 25; 32, 33; 43, 44; 47; 78 - 81).

4. A device in accordance with claim 2 or 3, characterized in that the receiving unit is moveable in the direction of the counter abutment member by the abutment member.

5. A device in accordance with any of the preceding claims, characterized in that the shape of the abutment member (11; 66) and/or that of the counter abutment member (32, 33; 24, 25, 43, 44; 47; 78 - 81) is matched to at least a part of the substrate outer edge (21, 22, 27, 28, 40, 41; 70, 71) of the substrates (1, 2; 60, 61).

6. A device in accordance with any of the preceding claims, characterized in that the abutment member (11; 66) and/or the counter abutment member (47) comprises protrusions (14, 15; 51, 52; 73, 74) which have abutment surfaces (16, 17; 53, 54; 75, 76) pointing towards the receiving unit, whereby said abutment surfaces are matched to at least a part of the substrate outer edge of the substrates that are to be joined together, and the protrusions are spaced from one another by a

distance which corresponds to the spacing between the substrates (1, 2; 60, 61) located on the receiving unit (3).

7. A device in accordance with any of the preceding claims, characterized in that the abutment member and/or the counter abutment member comprises at least one cylinder (24, 25; 43, 44; 78 - 81) whose longitudinal axis runs essentially parallel to the common axis of rotation (8).

8. A device in accordance with any of the preceding claims, characterized in that the receiving unit (3) comprises a receiving pin (4) incorporating an assembly (7) for maintaining the spacing between the substrates (1, 2; 60; 61).

9. A device in accordance with claim 8, characterized in that the assembly comprises moveable noses, moveable balls and/or spring rings for maintaining the spacing between the substrates.

10. A device in accordance with any of the preceding claims, characterized in that the receiving unit comprises at least two separate receiving pins.

11. A device in accordance with any of the preceding claims, characterized in that a unit is provided for applying an adhesive on at least one of the substrates.

12. A device in accordance with claim 11, characterized in that the adhesive is an adhesive film.

13. A device in accordance with any of the preceding claims, characterized in that a joining unit is provided for pressing the substrates together.

14. A device in accordance with any of the preceding claims, characterized in that a vacuum chamber is provided.

15. A method of joining at least two non-circular substrates (1, 2; 60, 61) which are of the same peripheral shape and comprise inner holes (5, 6; 62, 63), in particular for forming an optical data carrier, wherein the method comprises the following steps:

- arranging the substrates on a receiving unit (3) matched to the inner holes in such a manner that they are mutually spaced and rotatable about a common axis (D; 8);
- aligning the substrates by bringing the substrate outer edges (21, 22, 27, 28, 41, 42; 70, 71) into engagement with at least

one abutment member and rotating the substrates about the common axis (D; 8); and

- joining the substrates (1, 2; 60, 61).

16. A method in accordance with claim 15, characterized in that the rotation of the substrates is effected by bringing the substrates into engagement with the at least one abutment member and a counter abutment member.

17. A method in accordance with claim 15 or 16, characterized in that an adhesive is applied on at least one of the substrates.

18. A method in accordance with claim 17, characterized in that the adhesive is an adhesive film.

19. A method in accordance with claim 18, characterized in that joining is effected by pressing the substrates together.

20. A method in accordance with any of the claims 15 to 19, characterized in that the aligning and joining processes are effected in a vacuum.